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MEDICAL NEWS LETTER

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United States Navy

MEDICAL NEWS LETTER

Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget (19 June 1958).

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HISTORICAL FUND
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A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute, please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

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Steroid Withdrawal Syndrome

A syndrome characterized by fever, anorexia, nausea, lethargy, arthralgia, desquamation, weakness, and weight loss has been reported to develop in patients with spontaneous hyperadrenocorticism 10 days to several weeks after they have undergone adrenalectomy. Many of the symptoms suggest the presence of adrenocortical insufficiency and it has been hypothesized that the syndrome is due either to relative adrenal insufficiency in patients whose tissues are conditioned to high levels of adrenocortical steroids or to "acute nutritional deficiency due to nutritional repletion after correction of hyperadrenocorticism." A somewhat similar syndrome has been described in some patients with rheumatic diseases during gradual withdrawal of steroid therapy.

A primary objective of the authors' study was to determine whether the adrenal atrophy produced by chronic administration of adrenocortical hormones could be prevented by simultaneous chronic administration of ACTH. Although occurrence of adrenocortical atrophy during steroid therapy has been unequivocally demonstrated, the status of the hypothalamic-pituitary-adrenal system after withdrawal of steroid therapy has not been firmly established. When adrenal steroids are suddenly withdrawn from patients who have been receiving them chronically, a period of anatomic and functional adrenocortical insufficiency results. There is evidence of spontaneous recovery within 5 to 20 days and marked acceleration of recovery following administration of ACTH.

The authors made a controlled study, administering zinc-corticotropin during the entire period of prolonged steroid therapy. A striking degree of hyperadrenocorticism was maintained throughout the period of therapy. An excessive response to ACTH did not occur; this suggested either that the concurrent ACTH therapy had not completely prevented atrophy of the adrenal cortex or that the plasma was being cleared of steroids at an accelerated rate. Nevertheless, a normal baseline level and normal response to ACTH, found after withdrawal of steroid-ACTH therapy, clearly indicated that physiologically significant adrenocortical atrophy was not present at that time.

Development of symptoms suggesting adrenocortical insufficiency in the authors' cases, despite the normal response to exogenous ACTH, raised the possibility that secretion of endogenous adrenocorticotropic hormone had been suppressed by prolonged administration of prednisone and/or ACTH. There is no evidence that adrenal steroids suppress both the release and biosynthesis of endogenous ACTH while they are being administered. In addition, some observers have suggested that, in certain patients with a preceding history of spontaneous or iatrogenic Cushing's syndrome, functional impairment of endogenous ACTH secretion may be demonstrated and may persist for long periods of time.

Results of experiments with rats indicate that both the pituitary content and release of ACTH are diminished during therapy, but rapidly return toward

normal after discontinuation of the hormones. In the patients studied by the authors, the results obtained by the insulin tolerance test indicated that the hypothalamic-hypophyseal-adrenal system was intact after steroid-ACTH withdrawal even though some patients were experiencing withdrawal symptoms. Therefore, they assumed that the synthesis and release of endogenous ACTH in response to stress was not impaired. This conclusion was supported by the results of measurement of three established parameters of hypophyseal-adrenal cortical functions: insulin sensitivity, presence of hypoglycemia responsiveness and, a rise in the level of plasma cortisol.

In the patients of this report, symptoms that occurred after steroid-ACTH withdrawal clinically suggested presence of adrenocortical insufficiency. They are difficult to explain in view of the laboratory evidence indicating an intact hypothalamic-pituitary-adrenocortical system. It seems probable that some mechanism is operative in which neither anterior pituitary nor adrenocortical insufficiency accounts for the syndrome. Various observers have described a "panmesenchymal reaction" in patients during withdrawal: this includes myalgia, arthralgia, acute vasculitis, panniculitis, peripheral neuritis, and other disorders.

In view of the differing symptomatology observed by the authors and other investigators, it is not clear whether the withdrawal syndrome is a well-defined, discrete entity. The differences may possibly have been conditioned by the different types of patients. However, histologic evidence of vasculitis and panniculitis should be sought in patients without collagen disease who are experiencing symptoms after steroid withdrawal or after bilateral adrenalectomy for Cushing's syndrome. At the present time, the etiology and pathogenesis of the hyperadrenocorticism-withdrawal syndrome remain to be elucidated.

It should be reemphasized that the results obtained in this study which employed both prednisone and ACTH may not necessarily apply to patients treated with steroids alone in whom the sudden withdrawal of steroid therapy may be followed by true adrenal insufficiency. However, evidence is beginning to accumulate which indicates that, in a large majority of cases, even patients treated with steroids alone eventually attain a normal hypothalamic-pituitary-adrenal system after withdrawal of steroid therapy. (T. T. Amatruda Jr., et al., A Study of the Mechanism of the Steroid Withdrawal Syndrome. Evidence for Integrity of the Hypothalamic-Pituitary-Adrenal System: Clinical Endocrinology, 20: 339-354, March 1960)

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Should your assistant make an important observation, let him publish it. Through your students and your disciples will come your greatest honor.

Osler

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Postnasal Discharge

Postnasal flow of mucus is a normal function and only when the patient becomes conscious of it does it assume clinical significance. The symptom is seldom due to the often alleged "sinus trouble" which implies infected sinuses.

Every 24 hours, 1,000 to 1,500 ml. of mucus is formed by the mucous glands in the nose and sinuses. This liquid forms a film over all the mucosa and is moved in a definite direction by the coordinated beat of the cilia. The mucus current in the sinuses is toward the ostia; in the nose, toward the choanae; in the nasopharynx, diffusely over all surfaces and then downward. The majority of the mucus is formed in the nose; the sinuses form just enough, under normal conditions, to moisten their surfaces and to provide a current for removing any possible foreign material. Formation of the fluid is controlled by the autonomic system—the parasympathetic causes increased production, the sympathetic acts in opposite fashion. Its normal composition is 3% mucin and 97% water. This moving liquid blanket has two main functions. The first and most important is to humidify the inspired air. Somewhat less than half of the total output is used in this way, the excess reaching the hypopharynx where it is swallowed. The second function is as a mechanical washer. Foreign particles, bacteria, et cetera, are caught in the tenacious mucus film which—moving several millimeters a minute—prevents them from settling and producing irritation and infection.

Abnormalities of mucus production, flow, or composition, giving rise to the sensation of postnasal discharge, may occur because of:

(1) Autonomic imbalance. This may result from noxious stimuli, such as allergy, infection, and irritant fumes. Parasympathetic excitation produces an excess of mucus.

(2) Glandular atrophy, as seen in atrophic rhinitis and the mucosal atrophy of old age, causes diminished formation of mucus. Because of evaporation, the remainder becomes viscid, cannot be moved by the cilia at a normal rate, stagnates, and may become secondarily infected.

(3) The ciliary beat may be slowed or stopped by repeated use of such drugs as cocaine or epinephrine, but, particularly, by dry air.

(4) Intranasal hard or soft tissue obstructions mechanically impede the secretory current and may initiate the sensation of postnasal discharge by retention of mucus as well as by excessive evaporation due to abnormal ventilation of misdirected air currents.

(5) The composition of the mucus may be too thick or too thin, lessening the mechanical efficiency of the cilia and causing delayed flow.

Actually, in order not to have conscious postnasal discharge, a normal amount of mucus must be formed, of normal consistency, moved by normally acting cilia, along normal anatomic pathways.

Considering the categories of postnasal discharge, the first letter of each group, in the order of description, spells the unintelliglble "MMITNNS"

which imagination can interpret as "mittens." This mnemonic aid may prove useful in remembering the general classes into one of which it is usually possible to place any case of postnasal discharge.

Mechanical. Soft tissue anomalies and congenital or post-traumatic intranasal distortions and deviations interfere with normal mucus flow by causing abnormal ventilation and often, obstruction. Too much mucus may be evaporated if one nasal chamber is too large, rendering the remainder viscous and its movement slowed. Jet action of misdirected air streams can dry a particular area, causing accumulation of thick mucus. It is only one step more to bacterial penetration and infection. Diagnosis is suggested by a chronic history of deficient nasal ventilation of one or both sides, mucoid postnasal discharge, and presence of intranasal mechanical faults. Treatment is surgical correction if symptoms are sufficiently severe.

Metabolic. Hypothyroidism may be a cause of postnasal discharge, probably due to a change in the extracellular tissue fluid. This imbalance can be secondary to some other endocrine disturbance, such as hypopituitarism, so that awareness of the patient and his glandular system as a whole is necessary in diagnosis. Treatment by thyroid extract is gratifying in most cases.

Excessive production of nasal mucus in pregnancy is another common example in the metabolic group. Therapy is symptomatic with attention to complications which may develop.

Infections. Coloration of almost all nasal discharges of infectious origin is characteristic. The material is most often yellow, sometimes green, occasionally brown or gray. Infection as the primary cause of postnasal discharge occurs only in a minority of cases. In the presence of definitely developed infection, sinus involvement is frequent and may be demonstrated by transillumination or x-rays. Furthermore, in contradistinction to allergy, sinus involvement is seldom symmetrical. Treatment is initially medical and consists of nonirritating shrinking sprays to maintain drainage. Antibiotics or chemotherapy are used, if necessary, as well as other medical devices, such as displacement therapy, systemic vasoconstrictors, et cetera. Surgery is indicated only occasionally in the modern era. It should be done when medical treatment fails, if infection has produced irreversible tissue changes, when relief of some obstruction is necessary, or if complications threaten. Radical and extensive surgical procedures are rarely indicated.

Toxic. Production of excessive mucus and postnasal discharge by irritating substances in the atmosphere is well known. It is found in workers in quarries, mines, or industries producing chemical fumes. Individuals who smoke to excess present the same picture. Similarly, over-medication with nose drops produces a rhinitis medicamentosa and excessive mucus formation. The most common factor in the environment, however, is dry air. Therapy is avoidance of the offending condition.

Neurogenic. Neurogenic postnasal discharges are the most common type because allergy is included. The abnormal arteriolar spasm of allergy is

followed by slowed capillary circulation and dilatation, anoxia of capillary walls, increased permeability, augmented extra-cellular fluid content, and consequent swelling. Other allergists believe the engorgement is due to direct action of histamine or histamine-like substances on the capillary wall. The allergic reaction is brought about by physical, bacterial, ingested, or humoral agents. Nonallergic people would react similarly if the same stimulus were greater in degree or applied longer, or both. Thus, allergy is actually only a difference in degree. Emotional or mental aberrations or stimuli can produce a picture indistinguishable from sensitivity, even large numbers of eosinophiles being present in the mucus secretions of the nose. A third condition producing the same nasal picture is vasomotor rhinitis where no detectable sensitivity is present and the psyche is stable. The trouble is apparently an instability of autonomic innervation.

Diagnosis of neurogenic postnasal discharge depends on a detailed history, accurate skin testing, identification of possible offending substances, trials of antihistamines, awareness of mental and emotional states as important causes, and the help of the allergist or psychiatrist when indicated.

In the allergic case, avoidance of allergens or injections to counteract them usually works well. Antihistamine drugs are sufficient for the mild seasonal case. The occasional severe allergic episode needs ACTH or cortisone temporarily. Some authorities recommend a regimen to obviate the abnormal peripheral arteriolar spasm and capillary leakage: vasodilators, cholinergic blocking agents, and measures to prevent fluid retention. Surgery to restore proper ventilation and drainage should be done in cases where irreversible tissue changes—such as polyps—interfere with these two functions. Treatment of postnasal discharge of psychic origin lies within the realm of the psychiatrist, but much can be achieved by common sense advice. Vasomotor rhinitis may be controlled by the antispastic arteriolar regimen described.

New Growth. This constitutes a minor cause of postnasal discharge. Symptoms are usually unilateral, the discharge is frequently blood tinged, and is both anterior and posterior. Treatment is appropriate surgery, irradiation, or both.

Systemic Disease. In this category, the discharge is part of a general picture. Occasionally, it is predominant until the diffuse disease supervenes. Infections, such as influenza and infectious mononucleosis, usually have some rhinitis. Circulatory disease, such as heart failure or chronic nephritis with uremia and collagenous states, such as lupus erythematosus, are examples of systemic conditions with nasal symptoms. Treatment is that of the basic disease with symptomatic relief directed locally. (D. J. Reagan, Postnasal Discharge: Ann Otol, LXIX: 263-270, March 1960)

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Pertussis

Although in recent years pediatricians have turned their attention away from the common infectious diseases of childhood, pertussis is still a significant and dangerous disease, causing more deaths in the first year of life than measles, scarlet fever, diphtheria, and poliomyelitis combined. In 1955, there were 467 deaths due to pertussis reported in 62,786 cases of the disease in the United States. With reduction of the danger of secondary bacterial complications through the use of appropriate antibiotics, the mortality rate has been reduced markedly. In addition, the symptomatology of pertussis has been altered significantly by the advent of improved symptomatic care, chemotherapy, and mass immunization.

The authors made a study of all cases of pertussis admitted to a large general hospital during a ten and one-half year period. Ninety-four of 199 patients had a history of contact with pertussis within the month preceding onset of symptoms; no significant correlation between susceptibility to pertussis and sex was found.

Partial or complete immunization had been instituted in 31 cases prior to the onset of symptoms; in 13, immunization had been completed. It is possible that an occasional case of parapertussis was included in the series because the two diseases are clinically indistinguishable, although the symptoms of parapertussis are generally milder and of shorter duration. There is no cross immunity between the two diseases, and pertussis vaccine affords no protection against parapertussis.

The most frequent symptom of pertussis was paroxysmal cough which was observed in 85% of patients. Cough appeared about 16 days prior to admission and the onset of paroxysms characteristically followed in 8 to 10 days. Emesis, the second most frequent symptom, occurred in 70% of patients and usually followed an episode of paroxysmal coughing. The symptoms of respiratory tract infection, including profuse coryza, were often of such severity that the referring physician had instituted antibiotic therapy.

Cyanosis had been present in 25% of the children prior to hospital admission. No relationship existed between cyanosis and incidence of pneumonia in the children. Elevated temperature was considered to be significant in 26% of the patients. Pneumonia with other lower respiratory tract infections was the most common complication. Convulsions, reported in 10 patients, were not usually associated with marked hyperpyrexia. Diarrhea was a mild complication, without any significant pathogens being cultured from the stools. Otitis media occurred in 4.5%; beta-hemolytic streptococci were cultured from 25% of these cases.

Two types of complications were observed which were directly related to therapy with tetracycline drugs. In four cases, staphylococcal enterocolitis developed after 10 days of medication. In two cases, a severe laryngotracheitis developed; smear and culture showed Candida albicans.

While the white blood count in pertussis is described as characteristically greater than 20,000 per cubic millimeter, this was not true in 43% of the hospitalized patients. An extreme variability in count made it impossible to predict complications by this means in any individual case. No relationship could be established between the white blood cell count and prior immunization or with the subsequent clinical courses. Generally, the lymphocytes comprised 50 to 75% of the differential white blood cell count.

Many authors state that hyperimmune human serum, hyperimmune rabbit serum, chloramphenicol, chlortetracycline, and oxytetracycline prescribed during the catarrhal stage will mitigate the severity of the disease; it is extremely difficult, however, to diagnose the disease during this stage. Varying effects of these forms of treatment have been reported. The authors observed a rapid decline of the white blood cell count in those cases treated with a broad-spectrum antibiotic. They believe that use of hyperimmune human globulin and a broad-spectrum antibiotic in the incubatory, or catarrhal, stage of the disease is indicated, but specific antimicrobial therapy is not indicated in the uncomplicated hospitalized case. Although biostatistical proof is lacking as to its efficacy, it is their further opinion that 2.5 ml of hyperimmune human globulin given every other day for three doses to all seriously ill children and to those under one year of age may shorten the paroxysmal stage.

The most important reason for immunization against pertussis is to reduce the incidence during infancy. Most authors agree that alum-precipitated vaccine is superior to saline-suspended vaccine except that immunity is produced more slowly. The immunization program should begin at one to two months of age. Because the height of the antibody titer is not reached for 2 to 4 months after completion of immunization, early immunization cannot offer reliable protection during the neonatal period. Nevertheless, if an infant is likely to be exposed to pertussis, this immunization procedure would reduce the number of cases and the severity of the individual case. The reported over all success of vaccination varies from observer to observer.

Although passive transfer of antibiotics across the placenta does occur, this is rarely true in pertussis. Vaccination of the mother, during either the first or third trimester of pregnancy will result in protective titers in a significant number of infants. This procedure has not received widespread acceptance in the field of obstetrical practice because of the known severe reactions to pertussis vaccine in the adult and the possible danger to the fetus.

A third method of protecting the newborn child is to prevent his exposure to an active case of pertussis. Because the most frequent exposure of an infant is to another child living in the home, active immunization of all the children in the home would afford considerable protection for the neonate. B. pertussis is not known definitely to exist in human beings in a carrier state.
(S. Kaufman, H. B. Bruyn, Pertussis: AMA J Dis Child, 99: 417-422, April 1960)

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Lung Biopsy

Diffuse pulmonary disease presents a challenging diagnostic problem. Lesions diffusely scattered throughout the lung may be manifested by debilitating respiratory symptoms—dyspnea, cough, and sputum production; by constitutional findings—fever, weakness, malaise, and weight loss; or they may be asymptomatic and discovered only on routine roentgenography. Such lesions may result from dissemination of fine particulate material into the lungs by inhalation or through vascular or lymphatic circulations. Diffuse lesions of the lung may also represent pulmonary involvement by a systemic disease or may be a congenital abnormality.

Despite careful clinical history, physical examination, and laboratory studies, tissue confirmation by histologic examination or culture is the only definitive step to a final diagnosis. Scalene node biopsy is notoriously unsatisfactory. Direct lung biopsy is a simple and relatively benign procedure, and its effectiveness and accuracy have been confirmed by several observers.

The authors describe the technique they employ in an effort to further establish the value of the procedure and to advocate early employment in indicated instances. The procedure may be readily used even in patients who are respiratory cripples and who would be unable to tolerate a major thoracotomy as a definitive procedure.

Complications have been minimal, in the authors' experience, and results have yielded definitive diagnosis in 89% of cases. The diagnosis was proved wrong by subsequent study in only one case out of 36 procedures.

In diffuse lesions of the lung, the interstitial areas and not the alveolar spaces are involved in the majority of instances with a resultant proliferative tissue reaction. The offending foreign material, whether bacterial or tumor, is distributed symmetrically through the vascular and lymphatic systems of the lung into the interstitial areas without extension into the external communicating alveolar spaces.

The very nature of disseminated disease excludes the possibility of extensive exudation throughout all areas of the lung. Even when exudation is an accompaniment, the specific etiologic factor is not easily determined by routine measures. Thus, direct biopsy of the involved tissue would appear to be the best method of obtaining a diagnosis. A definite diagnosis is important so that specific therapy may be utilized when available.

The criterion for a direct and relatively simple and safe diagnostic procedure is met by the pulmonary biopsy. Its use, not as the last diagnostic step, but as one of the first procedures, appears warranted. (T. W. Shields, S. K. Sweany, Lung Biopsy: Surg Gynec Obstet, 110: 585-593, May 1960)

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Mesenteric Vascular Disease

The mesenteric arteries are subject to the same atheromatous, thrombotic, and embolic phenomena that are so frequently associated with the coronary and cerebral vessels. Acute mesenteric vascular occlusion is familiar to all, but only in recent times, have some of the subtle changes of mesenteric ischemia, insufficiency, and incomplete infarction become recognized. Because the main visceral organ supplied by the mesenteric arteries is the bowel, considerable information may be gained from study of plain roentgenograms of the abdomen and barium meal and enema examinations, as well as from contrast visualization of the aorta and its branches.

Etiology. Etiology of mesenteric vascular occlusion varies. Underlying systemic disease, generalized atherosclerosis, cardiac disease with endocardial vegetations, atrial fibrillation, recent myocardial infarction, and vasculitis, particularly, play important roles. Blood dyscrasias, such as polycythemia and leukemia, and cardiac and abdominal surgical procedures may also be responsible for its occurrence. In some instances, no apparent cause is demonstrable even at autopsy, and the occlusion may be due to injury to the vessel walls.

Mesenteric arterial occlusion may be either embolic or thrombotic in nature and is far more serious than venous occlusion which is always thrombotic and frequently due to disease of the splenoportohepatic system and infection of the visceral and pelvic organs.

Clinical Findings. Pain is usually—but not always—a prominent feature in the patient presenting with mesenteric vascular disease. The variable types of pain which may occur often reflect the kind or extent of vascular involvement, but are not necessarily pathognomonic. The pattern of acute occlusion is well known. In subacute or chronic vascular occlusion, pain may be described as dull or aching and is often periumbilical. It may be anginal in that attacks occur spasmodically and may last for minutes or hours. A striking feature in some patients has been the relation of pain to meals, appearing one to two hours after eating and lasting two to four hours. The severity of this postprandial pain may be proportional to the quantity of food ingested—presumably a reflection of work overload on the relatively ischemic bowel. In chronic cases, the symptoms may be quite mild. Anorexia and nausea are frequent. Vomiting may occur three to four times daily in subacute cases. Vomitus will contain blood only in the acute case. Watery diarrhea, sometimes "soap bubbly" in appearance, may accompany the vomiting. Guaiac positive stools or frank blood will be present if the bowel is infarcted.

Temperature elevation to 102° F. and white blood cell counts of 15,000 to 20,000 are not uncommon. Microscopic and macroscopic hematuria may indicate associated renal vascular ischemia. Elevated alkaline phosphatase may suggest that the celiac axis is also involved. In cases of chronic mesenteric insufficiency malabsorption syndromes may be

documented by various studies of which the d-xylose test seems to be the most sensitive.

Prognosis. Prognosis of acute mesenteric occlusive disease, in general, is poor. It is influenced by the extent and rapidity of the process, its prompt recognition, and its resectability. A mortality ranging from 60 to 85% has been recorded in those in whom surgical resection was attempted. However, spontaneous recovery from mesenteric occlusion does occur, but is exceptional. In subacute and chronic cases, prognosis is uncertain as the disease often may not be recognized.

Physiopathologic Considerations. Mesenteric insufficiency and angina are frequently unrecognized clinical entities. As in other vascular insufficiency states, the condition is actually manifest in the patient by secondary physiologic, chemical, and pathologic changes which occur in the organ receiving the vascular supply.

When the arterial blood supply to the bowel is cut off completely by either thrombi or emboli, the result in the intestine is infarction. If the blood flow through the bowel is partially reduced to a point less than that required to produce actual infarction, it is theoretically conceivable that a state of incomplete bowel function or bowel decompensation might occur. The digestive processes and absorption through the lacteals may be less than normal. That such a state has occurred has been observed clinically in a few patients, resulting in sprue-like malabsorption syndromes. Further, interference with blood flow in mesenteric veins may result in intestinal edema and functional "congestive failure." Such secondary changes may continue for weeks or even months.

In the bowel, another feature is to be considered—the fact that the normal bowel contains an abundant and variable supply of bacteria. Therefore, if ischemia is of sufficient degree to interfere with the integrity of the mucosa, inflammatory changes in the bowel wall are likely to be more severe than relatively aseptic ischemia or infarction in other organs such as the heart or brain. Thus, some cases have also exhibited localized areas of severe inflammation with narrowing of the lumen, mimicking regional enteritis. It is conceivable that many cases diagnosed as Crohn's disease may actually have a vascular etiology.

Acute complete infarction of a segment of bowel will sometimes result in inflammatory thickening of the intestinal wall and its surrounding fat to an extent sufficient to produce a mass which may be palpable or visible on roentgenograms. Such a mass may simulate a tumor, but the mucosa appears to be grossly intact.

When ischemia is temporary and localized, infarction is usually incomplete. In such an instance, a localized contracted segment of bowel simulating ulcerative colitis may occur, and the patient may recover without further incident. If a localized vascular ulcerative colitis or regional enteritis is of severe degree and the patient recovers, secondary stricture of the bowel may result.

Roentgen Manifestations. Roentgen manifestations of mesenteric vascular disease depend on the rapidity and extent of involvement, size of vessels involved, precise anatomic site of narrowing or occlusion, extent of available collateral circulation, integrity of the bowel mucosa, and presence or absence of bacterial infection of the bowel.

Cases of arterial insufficiency producing "mesenteric angina" may show little or no change on plain or barium studies. Likewise, extensive infarction may or may not produce gaseous distention of the bowel. Differentiation of mesenteric artery occlusion from vein occlusion may be extremely difficult in many instances.

Emphasis was recently placed on the value of contrast studies in diagnosis of mesenteric vascular disease, particularly in the subacute and chronic forms. This type of examination may be quite feasible, often informative, and not necessarily hazardous.

Aortography may or may not demonstrate occlusion or diminution of the mesenteric vascular flow. With the present state of knowledge, visualization of apparently patent mesenteric arteries should not exclude the diagnosis. It is quite possible that a change more subtle than macroscopically visible dimunition of vascular flow in the larger arteries is to be dealt with. If the mesenteric artery is visualized, consideration should be directed to the possibility of mesenteric venous thrombosis.

Employment of various roentgenographic techniques may aid in establishing the diagnosis of possible cases of mesenteric vascular disease, and further, may be of valuable assistance in clinical management. The present day status of bowel and vascular surgery offers the possibility of altering an otherwise grave prognosis. (C. C. Wang, J. D. Reeves, Mesenteric Vascular Disease: Amer J. Roentgenol, 83: 895-908, May 1960)

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Gastrodialysis in Acute Renal Failure

The objectives of dialysis in management of acute renal failure include both correction and prevention of various electrolyte disorders and removal of nitrogenous products responsible for the uremic syndrome.

In the past, gastric lavage has failed as a method of dialysis because of uncontrollable electrolyte transfers and loss of large amounts of dialysis fluid to the patient. The use of a cellophane bag has solved these problems and has made gastrodialysis technically possible. The theoretical advantage of a method of continuous dialysis as compared with intermittent dialysis offers great appeal in that it might be possible to obviate the major fluctuations in the uremic state inherent in intermittent dialysis. Further, if continuous dialysis were sufficiently effective in removing metabolic wastes as well as in correcting electrolyte abnormalities, it might be possible to avoid

the time-consuming, highly technical procedure of hemodialysis or to significantly decrease the number of hemodialyses necessary to sustain the patient through a period of renal failure.

The authors employed the plastic bag technique in 14 patients with acute renal failure. Description, with illustrations of the bag, dialysing fluid, and equipment for maintenance of cycling the fluid is presented.

In management of patients with acute renal failure, the magnitude of electrolyte transfer by gastrodialysis is adequate to manipulate body water, extracellular volume, and acid-base status. In general, the serum sodium is used as a guide to regulation of osmolality and, therefore, water requirements. Water losses—sensible, insensible, renal, and to the dialysate—if allowed to go unreplaced, will be accompanied by elevation in the serum sodium concentration. If no alteration of osmolality is desired, it may be necessary to give water to the patient or to decrease the glucose concentration in the dialysate.

The extracellular volume was used to determine the need for sodium removal which was undertaken in all patients with edema. Removal of sodium and water by gastrodialysis reduced extracellular volume below normal as judged from decrease in body weight.

If patients were severely acidotic at the outset, 100 mEq/L of sodium bicarbonate was added to the dialysate. This was associated with prompt repair of acidosis. After correction, removal of approximately 100 mEq/24 hrs of hydrogen ions was adequate to prevent recurrence of acidosis.

Potassium removal was adequate to avert hyperkalemia in most patients. However, removal of 25 mEq per day in patients with major catabolic loads associated with infection or injured tissue would prove inadequate to prevent potassium accumulation and hyperkalemia.

Wide variation in transfers—especially hydrogen ion transfers—might suggest that it would be difficult to arrive at the correct composition of dialysis fluid for a given patient. Actually, this is not true. A dialysis fluid containing 50 mEq/L NaCl and 20% dextrose would result in near zero net transfer of sodium. Water removal would average 200 ml/24 hrs; thus, the increase in serum sodium concentration would depend largely upon the magnitude of sensible, insensible, and urinary losses of free water. Hydrogen ion removal would vary with gastric acid production, often being small in the elderly patient. This loss would, in general, be approximately equal to the rate of H-ion production secondary to catabolism. Any alkalosis would be easily detected by measurement of the serum bicarbonate and readily corrected by addition of acid to the dialysate. Potassium removal would be small in magnitude and hypokalemia unlikely to result. Even more important is the fact that once the general range of transfers was established for any given patient, the range of variation was small.

The authors' impression is that gastrodialysis was beneficial in delaying onset of the uremic syndrome. It is likely that the clinical course was better than could be expected with conservative management alone.

Recently, the authors have undertaken prophylactic hemodialysis in management of patients with acute renal failure. The goal is to prevent any manifestation of the uremic syndrome and thus provide the patient with optimal opportunity to recover from his basic illness. Preliminary experience has been encouraging. (T. A. Marr, et al, Gastrodialysis in the Treatment of Acute Renal Failure: J Clin Invest, 39: 653-661, April 1960)

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Thyroid Storm

Thyroid storm or crisis—a severe, often fatal exacerbation of the manifestations of hyperthyroidism—requires prompt recognition and energetic treatment if the patient is to survive. Use of iodide and thiourea compounds to prepare the hyperthyroid patient for surgery has virtually eliminated post-thyroidectomy storm. It is well recognized that thyroid storm occurs in other than the immediate post-thyroidectomy period and that its attendant mortality continues to be observed during the course of untreated or partially treated thyrotoxicosis. Today, most deaths attributable to hyperthyroidism are due to such "spontaneous" or "medical" storms.

Definition. The criteria for diagnosis of storm are not absolute; diagnosis depends primarily upon clinical judgment. In addition to exaggerated manifestations of hyperthyroidism, other prominent indications are fever, marked tachycardia, and signs of central nervous system, cardiovascular, hepatic, and gastrointestinal dysfunction.

Clinical Features. Incidence has been reported to vary from 2 to 8%; the authors observed occurrence of storm in 7% of 384 cases of hospitalized hyperthyroidism. There appears to be no relation to sex, race, age, or season of the year, although differing opinions occur in the literature. In the authors' experience, all patients had exhibited manifestations of thyrotoxicosis for periods of 2 months to 4 years.

Onset of a storm, in the majority of cases, occurs abruptly by an acute exacerbation of signs and symptoms of hyperthyroidism, often following a complicating illness or traumatic event.

Physical signs of thyroid storm differ from those of hyperthyroidism only by a tendency to be multiple and more intense. Mental and emotional disturbances are striking. Fever greater than 100° F. is a cardinal manifestation which does not occur in uncomplicated thyrotoxicosis. Marked tachycardia is characteristic, and increased pulse pressure is common. Goiter and exophthalmos may be expected. Cardiovascular, hepatic, and gastrointestinal disturbances are frequent. No physical signs appear to be of particular prognostic value.

Extended laboratory studies during storm are not feasible because of the urgent need for treatment. Studies performed before or after storm

reflect only the usual findings of partially treated hyperthyroidism. Hepatic function tests are often abnormal and, although indicating hepatocellular damage, are not characteristic of a specific lesion.

Course and Complications. In the authors' experience, duration of storm in survivors varied from one to 8 days with an average of 3 days. Typically, the survivors responded rapidly to intensive therapy, defervescence beginning within 12 hours.

Following recovery from storm, thyrotoxicosis continues with nothing to distinguish it from the usual case of hyperthyroidism. Usual treatment must be continued until definitive results are achieved—usually 6 weeks or more.

In fatalities occurring in the authors' series, storm was protracted. Complications and coincident conditions contributing to death were heart failure, digitalis intoxication, jaundice, suppurative parotitis, rheumatic pancarditis, adrenal insufficiency, toxic hepatitis, and diabetes mellitus.

Treatment. Prophylaxis or prevention of storm should be the major objective of treatment. The virtual elimination of post-thyroidectomy storm by proper preparation of the hyperthyroid patient for surgery has been a significant accomplishment in this direction. To eilminate spontaneous medical storm, early diagnosis, prompt treatment, and measures to avoid storm are necessary in every hyperthyroid patient. It is important to realize that fever—with or without coexistent infection—is an indication for treatment for storm even if the actual existence of storm is in doubt. Fever in thyrotoxicosis should never be considered to be due to infection alone; when infection is overt, treatment for both storm and infection is indicated. Specific measures to avoid storm include prohibition of palpation of the thyroid in the severely thyrotoxic patient, and postponement of any surgical procedure or other manipulation when possible in every hyperthyroid patient until a euthyroid state is achieved. Reactions to drugs, such as digitalis and insulin, should be prevented by careful management. Antithyroid drugs should not be withdrawn for diagnostic or other purposes until hyperthyroidism is well controlled.

As experience with thyroid storm was gained by the authors, a specific plan of therapy was evolved. Measures directed toward maintenance of hydration and nourishment, control of hyperpyrexia, and relief of anoxia were important. Specific attack of the problem consisted of measures to decrease formation and release of thyroid hormone and counteract its peripheal action. Iodine was given as sodium iodide intravenously in doses of 1 to 3 Gm daily, or as Lugol's solution orally, in doses of 30 to 60 drops daily; propylthiouracil was given orally (or by intubation in comatose patients) in doses of 600 to 1,000 mg daily. To control peripheral manifestations of storm, reserpine was given intramuscularly in doses of 2.5 mg every 4 to 8 hours. Hydrocortisone, in doses of 100 to 300 mg daily, was given intravenously or intramuscularly not only to control peripheral manifestations and to counteract the stress of

storm, but also to offset the possibility of relative or absolute adrenal insufficiency. Because of this possibility, hydrocortisone seems preferable to ACTH. Specific complications—such as infection or congestive heart failure—were treated by appropriate measures. As the patient improved, drugs were given orally instead of parenterally, doses were decreased to maintenance levels and hydrocortisone was gradually withdrawn.

The effects of specific therapy were striking in this series. Defervescence and improvement in the general condition of the patient were often noted within hours after institution of ACTH or hydrocortisone therapy. The mechanism by which this improvement was brought about is unknown. Restlessness and tachycardia, in particular, responded to reserpine. Since its use was not attended by respiratory depression, reserpine appears to be much superior to morphine. The requirement for sedatives and hypnotics was reduced or obviated when reserpine was used. Side effects from the drug, such as hypotension, were not observed. It is the impression of the authors that recovery from storm was primarily effected by use of hydrocortisone, ACTH, and reserpine—iodine and propylthiouracil appeared to have little effect. The latter presumably serve mainly to prevent release of additional thyroid hormone. Other agents, such as promazine and related drugs, were used in some patients and had visible sedative effect.

In the authors' series, the mortality was 25%. The factors responsible for survival or death were not readily discernible.

Experience has shown that poststorm patients retain the propensity for exacerbation until hyperthyroidism has been controlled for a considerable period. For this reason, thyroidectomy is not the treatment of choice. Should the procedure be indicated for other reasons, use of iodides and steroids before and during surgery, and reserpine in addition afterward to prevent recrudescence of storm is recommended. Radioiodine therapy—tolerated well in most cases—is the therapy of choice unless contraindicated on other grounds. Even so, it is advisable that the patient be thoroughly controlled before radioiodotherapy. Premature withdrawal of antithyroid medication may permit a relapse of thryoid storm. (S. S. Waldstein, et al., A Clinical Study of Thyroid Storm: Ann Intern Med, 52: 626-642, March 1960)

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Refractory Ascites in Cirrhosis

One of the most common complications of cirrhosis of the liver is formation of ascites. In some patients, ascites can be easily controlled with sodium restriction and use of diuretics; in others, these measures are ineffective.

The organomercurial diuretics are frequently ineffective in promoting a sodium diuresis, and potentiation of their action by administration of

ammonium chloride is a procedure of considerable hazard in the cirrhotic patient owing to the possibility of ammonium toxicity. Following introduction of the use of chlorothiazide alone, little improvement has been seen.

As a means of combatting this problem, combined administration of chlorothiazide (2 Gm daily) and 6-methyl prednisolone (12-16 mg daily) was evaluated. In the study, 83% of patients with cirrhosis and ascites refractory to therapy with chlorothiazide alone exhibited marked sodium diuresis and loss of ascites when 6-MP and chlorothiazide were administered concurrently. Neither compound was effective alone in the authors' experience.

It should be emphasized that, although resistant ascites may persist for long periods of time in the patient with cirrhosis, it is by no means a permanent feature of this disease. If the patient can survive for a protracted period without intervention of a lethal catastrophe—such as hepatic coma or hemorrhage from an esophageal varix—a spontaneous diuresis may eventually appear. The urinary sodium content progressively increases and ascites is then lost without aid of diuretic therapy.

Although combined therapy was not effective in every instance of the authors' use, the regimen has reduced to a small number the percentage of patients with ascites refractory to treatment.

In the successfully treated cases, the diuretic response to combined therapy was usually rapid in onset and weight loss was apparent within the first 24 to 48 hours. When an initial satisfactory diuresis occurred with the combination treatment, there were no instances of a serious delayed acquired refractoriness even though the administration of the two compounds was continued over a prolonged period of time.

The mechanism whereby combination therapy induces sodium diuresis remains obscure. Regardless, concurrent administration of 6-MP and chlorthiazide appears to be effective in promoting diuresis in a large percentage of patients. Because there were no complications attributable to steroid therapy observed in this study, it would appear that administration of 6-MP is relatively safe. Nevertheless, it is recommended that this form of treatment be reserved for ascitic patients in whom an adequate trial of other diuretic regimens has proved unsuccessful. (A. G. Redeker, O. T. Kuzma, T. B. Reynolds, An Effective Treatment of Refractory Ascites in Cirrhosis of the Liver: AMA Arch Intern Med, 105: 594-600, April 1960)

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Sanitary Science Course for MSC Officers

Eligible Medical Service Warrant officers are invited to submit applications for the course in Sanitary Science offered at the University of California, Berkeley. The course, commencing in January 1961, consists of five months of full-time academic training in environmental sanitation,

advanced problems in sanitation, sanitary microbiology of foods and beverages, introduction to occupational health and industrial hygiene, venereal disease control, and community control of communicable diseases.

Applications must be received in the Bureau of Medicine and Surgery by 1 August 1960. Eligibility requirements and application procedures are set forth in BuMedInst 1520. 12A. Cost estimates requested by sub-paragraph 8. d. of the instruction need not be submitted.

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Congratulations to the Nurse Corps

Noting completion of 52 years of achievement of the Navy Nurse Corps, messages of congratulations and greetings from Mr. W. B. Franke, Secretary of the Navy, and ADM Arleigh Burke, Chief of Naval Operations, were received on 12 May 1960 by RADM Bartholomew W. Hogan, Surgeon General of the Navy. ADM Hogan forwarded the messages to CAPT Ruth A. Houghton NC USN, Director of the Nursing Division, with personal expressions of congratulations and appreciation as well as those of the entire Medical Department.

"Please convey my heartiest congratulations to all Navy Nurses on the 52nd anniversary of the Nurse Corps. Another year has passed in the history of the Nurse Corps—a year in which more luster has been added to its already shining record. Navy nurses will continue to be a highly respected and vital part of our naval service. Their outstanding performance, so characteristic in the past, will be ever more required to meet the challenges the future holds.

W. B. FRANKE
Secretary of the Navy"

"Please extend to all Navy Nurses my heartiest greetings on the occasion of the 52nd anniversary of their wonderful Corps. Through these 52 years, the Nurse Corps has contributed greatly to the magnificent advances made in medicine in our Navy and, true to the highest traditions of the Naval Service, Navy Nurses have aided Navymen and their families all over the world. The Nurse Corps has earned the warmest congratulations and admiration of the entire Navy. I know it will continue to do so in the years ahead. Best wishes!

ARLEIGH BURKE"

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Declassification of Documents

In consonance with the intent of OpNav Notice 5500 of 12 December 1959, to remind on a continuing basis all officers and civilian employees of the Navy Department who create classified documents or are responsible for subsequent declassification of the burdens resulting from over classification or failure to declassify, the following points to be considered are presented:

1. Remember, a document based on a classified document has to be classified ONLY if the new document contains classified information.

2. Safes may contain documents which have already been declassified or downgraded and no longer need such protection. Check your own safes and declassification notices and help eliminate unnecessary storage costs.

3. Relatively little information is of such transcendent importance that it requires protection as TOP SECRET or SECRET. If you are assigning a security classification to a document, make certain that you are not overclassifying.

4. Downgrading a document may be as important a money-saver as declassifying. For instance, a document downgraded to Confidential from Secret can be stored at less expense to the government. Recommend downgrading whenever possible.

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American Board Certifications - Active Duty

American Board of Pediatrics
LT James C. Parke Jr.

American Board of Preventive Medicine in Occupational Medicine
LCDR Norbert E. Rosenwinkel

American Board of Proctology
CDR Paul H. Sebrechts

American Board of Surgery
CDR Charles C. Houghton Jr., LT Carl L. Williams (USNR)

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From the Note Book

AFIP Loan Sets. With the latest addition—Clostridium Perfringens Septicemia—the Armed Forces Institute of Pathology Clinical Pathological Conference loan sets in the new series now number 46. A new series of study sets also are now available. These consist of lantern slide sets, the first of which are: Peripheral Nervous System Tumors (86 black and white slides), and Histochemistry Study Set (108 color slides). (AFIP Letter, 1 May 1960)

Severity of Rheumatic Fever Declining. Comparison of the severity of rheumatic fever in the past four decades from long-term studies in Boston is presented. The most striking features have been: modest decline in incidence of cardiac involvement in terms of residual murmurs (60% in 1950 - 1951); twofold amelioration in degree of carditis as indicated by heart size; and eightfold reduction in mortality rates. Factors that may have contributed to the decline are discussed. (E. Bland, New Engl J Med, March 24, 1960)

Alkylating Agents in "Solid" Tumors. An attempt has been made by the authors to show that certain chemotherapeutic agents, known to produce significant degrees of remission in the malignant hemopoietic diseases, also may cause significant and, at times, prolonged degrees of regression of metastatic or recurrent lesions of the "solid" tumor type. (B. Hall, et al., Ann Intern Med, March 1960)

Surgery for Parkinsonism. Surgical therapy is now applicable to a large percentage of the parkinsonian population. It can provide rapid and often complete relief of tremor, rigidity, and deformity, and attendant motor symptoms—often to a remarkable degree. Meticulous selection of candidates for surgery is as important as meticulous performance of the operation. Of more than 1,000 procedures reported, the authors obtained good results in 80%, with a mortality rate of 2.4%, and incidence of hemiparesis or hemiplegia slightly less than 3%. (I. Cooper, Ann Intern Med, March 1960)

Egg Yolk and Rheumatic Susceptibility. Concerned by lack of progress in defining the factors which determine rheumatic susceptibility—an apparent diathesis—the author discusses observations and studies showing that: (a) inadequate nutrition is part of a poor environment; (b) rheumatic-fever children usually lack sufficient eggs in their diets; (c) the escape from poverty is followed by an increase in consumption of eggs and a decrease in incidence of rheumatic fever; (d) supplementation of children's diets with egg yolk or certain fractions thereof is followed by decreased rheumatic susceptibility; and (e) there is a fraction of egg yolk which in extremely small amounts has been found to have high antiallergic activity in laboratory animals. (A. Coburn, Lancet, April 16, 1960)

Stapes Mobilization. Assessing the results of 939 stapes mobilization procedures on 611 patients over a 5-year period, some observations were: 60% were females; positive hereditary link could not be established; over all success rate of 65% with 60% showing a gain of 11 - 30 decibels; successes in mobilization are directly related to extent of the otosclerotic process. (C. Kos, et al., Ann Otol, March 1960)

Surgical Research Laboratory. A surgical research laboratory is essential for adequate training of surgical residents. Certain surgical techniques necessary in the conduct of modern procedures can be learned only in a laboratory of this type. Some experiences of the authors in developing such a research center at the Chelsea Naval Hospital are described. (CAPT A. Hering MC USN, E. Watkins Jr., A M A Arch Surg, April 1960)

DMCT Therapy in Infections. Demethylchlortetracycline—a new antibiotic—was used in treatment of patients with various infections including pneumococcal pneumonia and scarlet fever. With dosage of 150 mg at 6-hour intervals or less, results were obtained which were comparable to those from the other tetracyclines. With larger doses, some undesirable side-effects were noted. (E. Lichter, et al., A M A Arch Intern Med, April 1960)

Use of Hemocoavit in GU Surgery. The authors report a preliminary clinical study of the prophylactic use of the antihemorrhagic agent Hemocoavit (Vitamins C, K, and P) in the management of 565 patients. Less capillary bleeding was observed at the time of open operation; also noted were decreases in oozing from the cut surface of the resected twelfth rib, in need for transfusion, and in postoperative hemorrhage. (C. Mathé, et al., J Int Coll Surg, April 1960)

Lowering Serum Lipids. In adult subjects with hypercholesterolemia, a diet high in unsaturated fats, with added neomycin or large doses of nicotinic acid, resulted in lowering of serum cholesterol, phospholipid, and total esters. Findings indicated that unsaturated fats as well as neomycin produce changes in the intestinal flora which in turn may be responsible for some of the effects of these agents in lowering serum cholesterol levels. The mode of action of nicotinic acid in lowering serum-lipid concentrations remains unknown. (G. Goldsmith, et al., A M A Arch Intern Med, April 1960)

Effects of Tobacco on Respiratory Mucosa. Of 150 lungs removed at autopsy and studied, 50% of the nonsmokers had normal mucous membrane on microscopic study, while only 20% of the heavy smokers exhibited normal mucosa. The carina was the most frequent site of metaplasia. Age, occupation, and site of residence had no appreciable relation to changes observed. (K. Knudtson, Amer J Clin Path, April 1960)

The Peptic Ulcer Problem. From the Section of Physiology, Mayo Clinic and Mayo Foundation, Charles F. Code presents a detailed physiologic appraisal of peptic ulcer disease. Despite increasing knowledge, all secrets of peptic ulceration have not yet been fully exposed. (Amer J Dig Dis, April 1960)

Feedback Control of Cholesterol. The mechanism by which dietary cholesterol inhibits synthesis of cholesterol from acetate has been studied in rat liver slices. Evidence is presented which indicates that the primary site of this feedback regulation is at the first reaction on the pathway of cholesterol synthesis. (M. Siperstein, M. Guest, J Clin Invest, April 1960)

Virus-Like Bodies in Leukemia. During recent years, electron microscopic studies of leukemic tissues in chicken and mice have revealed the presence of intra and extra-cellularly located virus-like bodies. Some occurrence in human leukemias has been reported. However, the authors observations were completely negative in all cases of chronic leukemia, lymphosarcoma, and Hodgkin's disease. Only one of 16 patients with acute leukemia exhibited the virus-like bodies in the bone marrow. (H. Braunsteiner, et al., Blood, April 1960)

Thyroid Dysfunction Following Iodides. Few cases have been reported of the occurrence of goiter, with or without myxedema, associated with prolonged administration of iodides. The author presents four such cases in children and speculates that some intrinsic factors, as yet unknown, are important in predisposing to goiter development. (C. Falliers, A M A J Dis Child, April 1960)

Regional Chemotherapy for Cancer. The authors present their experience with treatment of 116 patients by means of localized perfusion by means of extracorporeal circuits. With this procedure, large amounts of a drug may be delivered to an isolated extremity, organ, or region of the body containing cancer, with maintenance of high arterial oxygen tension. Techniques and results are described and illustrated. (J. Stehlin Jr., et al, Ann Surg, April 1960)

Prevention of Implantation of Cancer. Review of data strongly supports the role of surgically transplanted neoplastic cell as a possible cause for recurrence of cancer within operative wounds. From laboratory studies, the authors conclude that the most effective tumoricidal agent that could be used for local "sterilization" and one which was also compatible with "normal" wound healing was 5 mg% nitrogen mustard. (C. Thomas Jr., B. Brown, Ann Surg, April 1960)

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DENTAL SECTION

X-Ray Hazards

During the past year there have been reports of radiation overexposure involving one Dental officer and eight Dental technicians. When such overexposures occur, as indicated by an evaluation of film badges, Commanding Officers of the respective personnel are routinely asked to make a special Photodosimeton Report of the incident giving background information. In the cases referred to, the reasons given for overexposure ranged from "carelessness" to "undetermined." It is very important that all Dental officers personally establish a foolproof safety system in their radiologic procedures so that no overexposure will occur. The protection of the Dental officer and the technician can be secured by observing such simple precautions as:

1. Never hold the film packet in the patient's mouth while the machine is "ON".
2. Stand behind a protective shield if one is available.
3. Always stand behind the x-ray head out of range of x-rays when the timer exposure button is pushed.
4. Rotate personnel making roentgenograms.
5. Keep a log containing the following entries:
   a. Number of full mouth (14) sets of x-rays taken
   b. Distance of the operator from the patient
   c. Total time in seconds of exposure

(Safe limits when all safety precautions are observed are:
24 inches from patient-15 sets or 600 seconds per week
35 inches from patient-30 sets or 1200 seconds per week
60 inches from patient-50 sets or 2000 seconds per week)

6. Use fast film.
7. Use filtered x-rays.
8. Reduce the field of exposure.
9. Wear film bandages. This is mandatory.

The following references provide additional detailed information on the subject of x-ray protection:

Radiological Safety Regulation (Rev. 1951) NavMed P-1325.
Photodosimetry Manual (Rev. 1957) NavMed P-5005.
BuMedInst 6150.18 Subj: Record of exposure to ionizing radiation.
Roentgen Ray Radiation, A.G. Richards JADA, 54: 476, April 1947.
Roentgen Ray Doses in Dental Roentgenography, A.G. Richards, JADA, 56: 35, March 1958.

Use of Roentgen Rays in the Dental Office, R. I. Todd, D. C. Worth: JADA, 51: 644, December 1955.

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ACD Answers on Ethics

A report published in the April 1960 issue of the American College of Dentists (ACD) Reporter contained the following questions and answers on the subject of "conduct" in relation to the ethics of dentists. Even though these are specific guides for Fellows in the ACD, the guidelines set forth should be observed by all dentists.

Q. Is a person entitled to a fee for appearing on programs as a lecturer or clinician?

A. Normally an essayist should be reimbursed for out of pocket expenses incurred as a lecturer or essayist. However, such expenses should not be gauged on possible time lost from practice.

Q. How is the amount of an honorarium determined?

A. The amount of an honorarium should be determined by the organization extending the invitation and responsible for the program, not by the essayist.

Q. Is it in order for a lecturer to receive compensation based on a per capita percentage of the fees charged for the lecture or course by the responsible organization?

A. No, this is not acceptable. The arrangements with an essayist should be on a basis clearly understood in initial arrangement. The organization responsible for planning a course or series of lectures should be prepared to meet all financial obligations connected with such course or lecture and also benefit from any surplus.

Q. May an individual organize a course or offer a series of lectures on a per capita basis and promote same?

A. No, this is considered out of order. An individual cannot qualify as "proper auspices."

Q. May a Fellow stipulate the compensation expected when he appears on a program?

A. No. If the arrangements offered are not acceptable, he should decline the invitation. He should not place his services on a silver platter.

Q. What is considered proper auspices for courses of instruction, lecture series, seminars, study clubs, et cetera?

A. Recognized dental societies, approved dental schools, or other recognized not-for-profit professional or educational agencies are considered proper auspices.

Q. Are dental supply houses, manufacturers, or agencies of this type considered acceptable auspices for courses of instruction?
A. No, they are sales agencies and are not acceptable auspices for courses of instruction. Education is not their province.

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Instructors' Manual for Inservice Training

The Dental Division is in the process of reducing its inventory of Instructors' Manuals for Inservice Training, NavMed P-5061 and P-5062. All activities having dental personnel assigned desiring additional copies of the manuals may obtain them by a letter of request to the Chief, Bureau of Medicine and Surgery, (Code 611).

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Personnel and Professional Notes

Philippine Dental Association. Navy Dental officers participating in the 52nd Annual Convention of the Philippine Dental Association in Manila, 25 - 29 May 1960 were:

Clinics

Fabrication of Temporary Acrylic Bridges - LT Roger H. Glagg DC USN, U.S. Naval Station, Sangley Point.

Complete Denture Impression Technic - LT Walter C. Gonthier Jr, DC USNR, U.S. Naval Air Station, Cubi Point.

Practical Management of Maxillo-Facial Fractures - LT James R. McAndrew DC USN, LT Charles E. Reaume DC USN, U.S. Naval Station, Subic Bay.

Simplified Rubber Dam Application - LT Richard D. Ulrey DC USN, U.S. Naval Station, Sangley Point.

Essays

Vitamin Deficiencies - LT Richard O. Gibbs DC USNR, U.S. Naval Station, Sangley Point.

Crown and Bridge Preparations - CAPT Anthony K. Kaires DC USN, U.S. Naval Station, Sangley Point.

Dr. Kerr Presents Clinic at Dental School. Alexander C. Kerr, L.D.S., B.S., Ph.D., Harvard University associate in physiology at the Forsyth Dental Infirmary, presented a clinic, The Role of Salivary Factors in Dental Health,

5 May 1960, at the U.S. Naval Dental School, National Naval Medical Center, Bethesda, Md. Speaking to Dental officers of the Armed Forces, civilian dentists, and other interested scientific personnel of the Washington, D. C. area as part of the special lecture series of the Dental School, Dr. Kerr described and reviewed physiologic investigations of the regulation of salivary secretions and biochemical investigations of salivary composition in relation to the effect of salivary factors on oral ecology in man.

British Dental Association. At a recent meeting of the Middlesex and Hertfordshire Branch of the British Dental Association at Barnet General Hospital, Barnet, Hertfordshire, England, table clinics presented by Naval Dental officers were: Use of Rubber Gloves in Conservative Dentistry - CAPT W. E. Ludwick DC USN; Technique for Impressions of the Partially Edentulous Maxilla - CDR E. R. Bernhausen DC USN; Special Endodontic Considerations - LCDR C. "S" Scruggs DC USN.

New Jersey State Dental Society. RADM C. W. Schantz DC USN, Assistant Chief of the Bureau of Medicine and Surgery (Dentistry) and Chief, Dental Division, represented the Surgeon General and the Bureau at the 90th Annual Session of the New Jersey State Dental Society at Atlantic City, N. J., 24-27 April 1960. RADM C. E. DeFord DC USN, Inspector General, Dental, was a guest of the Society at the meetings.

Reserve Dental Company 4-9. CAPT A. R. Frechette DC USN, Deputy Chief, Dental Division, and CAPT H. J. Wunderlich DC USNR, Head, Dental Reserve Branch, represented the Bureau of Medicine and Surgery at the annual banquet of Reserve Dental Company 4-9, University of Pennsylvania. The banquet, held at the Commissioned Officers Mess (Open), Philadelphia Navy Yard, on 2 May 1960, was attended by approximately 50 Dental Ensigns with their guests. Among those attending were: CAPT J. L. Loobe DC USNR, Commanding Officer, Reserve Dental Company 4-9; CAPT M. A. Moon DC USN, District Dental Officer, 4th Naval District; CAPT J. Kneisel DC USNR, District Dental Reserve Liaison Officer; Dr. Lester Burkette, Dean, University of Pennsylvania School of Dentistry; and CAPT E. A. H. Gargiulo DC USN, Chief of Dental Services, U.S. Naval Hospital, Philadelphia. The high spot of the evening was the announcement by CAPT Frechette of assignments for Ensigns who are to report for active duty upon graduation.

Joint Meeting in Morocco. Through efforts of CAPT G. H. Foell DC USNR, and LT COL H. W. Hilliard DC USAF, a joint Navy-Air Force-Moroccan Dental Meeting was recently held at Nauasseur Air Force Base, French Morocco. In addition to CAPT Foell, other members of the Dental staff at Naval Air Station Port Lyautey, French Morocco, who presented clinics were: LCDR R. A. Howard DC USN, LCDR F. M. Amman DC USN, and LT H. Muller DC USN.

RESERVE SECTION

National Medical Civil Defense Conference

The Council on National Security, American Medical Association, is sponsoring its eighth annual National Medical Civil Defense Conference, to be held at the Americana Hotel, Miami Beach, Fla., Saturday, 11 June 1960.

This year's conference is being presented by the Medical Department of the United States Navy and should be of particular interest to physicians and other professional health and medical groups. The program indicates that the problems of mass radiation casualties will be fully discussed, including current research in this field. In addition, the first scientific report of group reaction to isolation and confinement will be presented. The report comes as a result of the study of environmental conditions sustained by 97 persons while undergoing 2 weeks of underground shelter confinement.

The afternoon session will stress the importance of community preparedness as the basis for national survival. A film review of recent disasters with running commentary on the special medical problems of these situations will be presented.

As a conference highlight, medical units of the Second Marine Division will erect the components of a 60-bed field hospital in an area adjacent to the hotel. The conferees will view a demonstration of modern techniques and concepts in the setting up and operation of a mobile hospital for the management of mass casualties.

Reservists are cordially invited to attend the conference; there is no registration fee. The Council is also sponsoring a luncheon for the conferees. The Chief of Naval Personnel has authorized the awarding of one retirement point credit to eligible inactive Naval Reserve Medical Department personnel for attendance at the conference provided thay register with the military representative present.

Advance registration cards and programs are available to interested individuals upon request to district medical officers of all continental naval districts.

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Letters to the Bureau

This section, a new presentation for the Medical News Letter, was conceived as a means of providing valuable information to interested Naval

Reservists and field activities throughout the Naval Establishment and the Naval Reserve program. Correspondence received often poses interesting questions and the information furnished will not only assist the inquirers, but others who may have similar problems. Limitation of space may not permit publication of letters in their entirety.

Number of Years Required for Naval Reserve Duty.

"Presently, I am 27 years old, serving my internship and contemplating joining a reserve unit. I have not previously served in any branch of the service.

It would be appreciated if you would inform me as to the number of years of Naval Reserve duty required to fulfill my military obligation."

J. I. M., M. D.

Under the provisions of the Universal Military Training and Service Act, as amended, physicians commissioned in the Reserve forces who are 26 years of age or over are not required to execute an agreement to remain in the Naval Reserve 4 years following the 2-year period of active duty. At this time, however, physicians are not being accepted for appointment to remain on inactive duty. Only in the following categories are physicians appointed and ordered to active duty:

a. Physicians with 6 months or more of training in psychiatry beyond internship.

b. General practitioners with 2 or more years of residency training or general practice experience.

c. Volunteers for training in aviation medicine, submarine medicine, or special assignment such as Operation Deep Freeze.

d. Physicians desiring deferment for residency training in the specialties of General Practice, Occupational Medicine, Otolaryngology, Physical Medicine and Rehabilitation, or Psychiatry.

e. Volunteers who have no active duty Selective Service obligation but who desire to participate in Ready Reserve affairs.

As stated above, your age dictates that you would be required to serve only 2 years active duty, after which you would be eligible for release through resignation. However, only subparagraph (c) offers a means of appointment and immediate call to active duty.

Subparagraph (d) affords an appointment and a deferment until your board requirements are met. You would then be called to active duty as the needs of the service would dictate.

Additional information concerning appointment and service in the Naval Reserve is available at the nearest Navy Recruiting Station.

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Advice for Receiving ACDUTRA Pay

Planning on active duty for training? You'll receive your ACDUTRA pay and allowances in short order if you follow these hints:

Basic Allowance for Quarters (BAQ). Save yourself time and trouble by having your substantiating documents for BAQ completed and certified before you report for ACDUTRA. Officers must file Dependency Certificate-Wife, or Child under 21 Years, DD Form 137 or NavCompt Form 2040, whichever is available. Dependency Certificate-Mother and/or Father, NavCompt Form 2040-1, is required when appropriate. Enlisted Reservists must file Application for Dependents Allowance, NavPers Form 668. Failure to have these forms completed and ready for submission when requested will hinder or delay payment. Whenever possible, obtain these forms from your local Naval Reserve Training Center and have them completed there.

Copies of Orders. Reservists sometimes lack the proper number of certified copies of orders, or have incomplete orders with missing endorsements. All Reservists are required to have the original and eight certified copies of orders, completed with all endorsements including the signature of the Reservist acknowledging receipt of orders, in their possession when reporting for ACDUTRA. Do not detach any of the copies of the orders you receive unless you have more than the minimum number required. If you submit less than the required number, the disbursing office may return the orders to you for the purpose of preparing additional copies. Make sure that you have all possible endorsements completed before you submit your orders to the disbursing office. (The Naval Reservist, April 1960)

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ACDUTRA Training in Vector Control

Convening dates are listed below for the 14-day Active Duty Training Course in Disease Vector Control, U.S. Navy Disease Vector Control Center, U.S. Naval Air Station, Alameda, Calif.

Convening dates for fiscal year 1961 are:

1 August	through	12 August 1960
3 October	"	14 October 1960
5 December	"	16 December 1960
6 February	"	17 February 1961
3 April	"	14 April 1961
5 June	"	16 June 1961

This course is open to all Reserve male Medical Department personnel, both officer and enlisted. Billeting and messing facilities are available at the Naval Air Station, Alameda, Calif.

OCCUPATIONAL MEDICINE

Navy Industrial Health Meeting

A one-day meeting of U. S. Navy Personnel attending the 1960 Industrial Health Conference was held in Rochester, N. Y., 25 April 1960. An attendance of 70 Naval personnel representing more than 40 Naval activities made this one of the largest and most successful Navy occupational health meetings in several years. Thirty-five guests from the Army, Air Force, U.S. Public Health Service, Industrial Medical Association, and American Industrial Hygiene Association brought the total attendance to more than 100.

The major part of the program was in panel form to permit as many officers and civil service employees as possible to participate. After the meeting, the group of Naval officers and civil service industrial physicians and industrial hygienists participated in the meetings of the Industrial Medical Association, American Industrial Hygiene Association, and the American Conference of Governmental Industrial Hygienists which, together with the Industrial Nursing Association, sponsored the Annual Industrial Health Conference. Attendance at the 1960 Conference exceeded 3,000.

Among distinguished guests attending the Navy Meeting were: Professor Philip Drinker, Harvard University, Advisor on Industrial Hygiene to the Surgeon General of the Navy; William P. Shepard, M. D., Director of the A. M. A. Council on Occupational Health and Vice President, Metropolitan Life Insurance Company; Mac Roy Gasque, M. D., Chairman, Council on Industrial Medicine, Southern Medical Association and Medical Director, Olin Mathieson Company; Adolph Kammer, M. D., Professor of Occupational Medicine, University of Pittsburgh; Jack C. Radcliff, President, American Industrial Hygiene Association and Industrial Hygiene Director of the Ford Motor Company; and RADM H. K. Sessions MC USN (Ret), Director, Health Specialty Services, Georgia State Health Department.

Topics in the Navy program were of vital interest and significance in this era of nuclear jet propulsion. Comments of Naval personnel and guests indicated a consensus that the program was timely, educational, and interesting.

Following introductory and welcoming remarks by CAPT Lloyd B. Shone MC USN, Director, Occupational Medicine and Dispensary Division, and CDR F. A. L. Johnson MSC USN, Head, Industrial Hygiene Branch, Bureau of Medicine and Surgery, discussions of varied subjects were presented. The

first panel discussion of the morning session—Organization and Functions of Radiological Health Program in Nuclear Powered Submarine Construction and Repair—was moderated by CAPT G. J. Duffner MC USN, Director, Submarine Medicine Division, BuMed, and coordinated by CAPT G. D. Hutchinson MC USN, Mare Island Naval Shipyard. In addition to LCDR W. H. Dentler MSC USN, Preventive Medicine Unit No. 6, Pearl Harbor, panel members from their respective Naval Shipyards were: Guido Rosati, Mare Island; A. V. A. Munton, Portsmouth; J. McElhiney, San Francisco.

Naval Air Stations Hearing Conservation Program—a panel with CAPT M. H. Goodwin MC USN, Assistant Chief for Aviation Medicine, BuMed, as Moderator, and CAPT D. Hersh MC USN, Naval Air Station, San Diego, as Coordinator, was composed of Naval Air Station representatives: CDR R. G. Nebelung MSC USNR, Pensacola; Salvatore DiLustro, Quonset Point; Alfredo Salazar, San Diego; Oscar Sobol, Alameda; and H. J. Worsham, Norfolk.

The afternoon sessions began with three presentations: The Triaryl Phosphate Fluids, Summary of Toxicological Data—CDR J. Siegel MSC USNR, Officer in Charge, U. S. Navy Toxicology Unit; Role of the Advisory Center on Toxicology in the Navy Occupational Health Program—Harry W. Hays, Ph D, Director, Advisory Center on Toxicology, National Research Council; and Man in Space—CAPT C. P. Phoebus MC USN, Director, Astronautical Division BuMed, and CDR S. Goren MSC USN, Pacific Missile Range, Point Mugu, Calif.

Mr. C. P. I. Bergtholdt, Navy Weapons Plant, was coordinator for the afternoon panel—Civil Service Standards for Industrial Hygienist Positions in the Naval Establishment—consisting of representatives of various Naval Shipyards: Victor Kindsvatter, Ph. D., Philadelphia; Harry Gilbert, New York City; Seymour Levinson, Norfolk; and Ernie Storlazzi, Boston.

The one-day session ended with panel discussions on Industrial Hygienists of two of the Bureaus: Bureau of Ships, Verne Johnson, Head, Safety Branch, IRD, Moderator; and Bureau of Weapons, J. C. Johnston, Industrial Safety Officer, General Safety, Moderator.

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Medical Protection of Travelers

The horizons of travel are becoming so extensive that more and more Americans are visiting lands that were formerly considered remote and exotic. More than 1,500,000 residents of the United States will go abroad in 1960, with approximately 600,000 traveling to Mexico, 800,000 to Europe, and between 100,000 and 200,000 to more distant areas.

Prior to their departure, almost all travelers will visit their personal physicians who will then have an opportunity to practice preventive medicine in an ideal fashion. Although most traveling patients will be interested mainly in meeting the legal requirements for travel abroad, all of them should receive

carefully administered immunization and inoculations and adequate briefing about hazards likely to be encountered.

Vacations, business trips, and major international conferences are often interrupted by minor ailments that might have been avoided if some attention had been given to simple preventive measures. One-third of the travelers to Southern Europe and Mexico have reported attacks of diarrhea.

More important is the fact that in many foreign lands, major diseases such as smallpox, amebiasis, and hepatitis are not idle threats but actual hazards.

As an aid to emergency treatment by a foreign physician, the patient should carry a separate statement of any abnormalities such as diabetes or coronary-artery disease. Patients over 65 years of age may require a general health certificate for travel on freighters which do not carry physicians.

The following excerpts on medical protection for travelers offer a good review of pertinent items that should be of interest to travelers. It is not to be considered as changing any of the regulations contained in BuMed Instruction 6230. 1B of 28 March 1960, with the subject, Immunization requirements and procedures.

SMALLPOX. The recent appearance of smallpox in New York, Mexico, England, France, Italy, Germany, and the serious outbreaks in India and Pakistan during the past few years, should be a warning that vaccination is not merely an academic process that may be casually handled, but is an essential procedure for the protection of the patient that must be carefully carried out. Those planning to visit such countries as Pakistan, and India, where smallpox has recently been reported, should be revaccinated regardless of the date of the last inoculation.

The site of inoculation is important to fashion-conscious patients who are not likely to forgive the physician who scars an arm unduly. The multiple-pressure method leaves the smallest scar. Women may be vaccinated in the anterolateral aspect of the thigh at a point not covered by undergarments. It is important to allow the alcohol used for cleaning the skin to dry completely before applying the vaccine. No bandage is necessary, but if there is bleeding, a 2 x 2 cm gauze square may be applied and fixed loosely with two strips of transparent cellulose tape.

The importance of "getting a take" cannot be overemphasized. The so-called "immune" reaction does not reflect immunity, but merely a sensitivity to vaccinia virus produced by previous inoculations. Such an allergic reaction appears within 24 hours and usually disappears in 3 days. The reaction of immunity (vaccinoid) is evident later. Therefore, revaccinations should be inspected after 3 and 7 days. Outdated or improperly stored vaccine is responsible for many "nontakes."

YELLOW FEVER. Yellow fever exists in the Americas between Brazil and Mexico inclusive, and in Africa, roughly between latitudes 15°N. and 15°S.

Most countries require certificates of travelers who have passed through infected areas, although sometimes the definition of an infected area may seem arbitrary. India and Pakistan require certificates from all who arrive by air. Hence, it is suggested that all travelers to Central or South America, Africa, Asia, and the Pacific areas be inoculated for their own protection where yellow fever is endemic and to meet legal requirements elsewhere. A certificate is not acceptable until 10 days after inoculation, except in India, Ceylon, and Pakistan where 12 days must elapse. The certificate is considered valid for 6 years.

Because the vaccine is not usually available to the practitioner, vaccination must be done at the nearest Public Health Service office. In the United States and in British areas, the 17-D vaccine (0.5 ml of a 1:10 dilution of concentrated vaccine) is administered subcutaneously regardless of the age of the patient. Reactions are rare, but if the patient is allergic, especially to eggs, 0.1 ml may be administered intracutaneously as a substitute for the routine procedure. Systemic reactions consist of headache, muscular pains, especially in the extremities and back, and slight fever. These occur in 5 to 10% of patients usually 5 to 8 days after inoculation.

To reduce the hazard of postvaccinal encephalitis, inoculation should not be done at the same time as vaccination against smallpox. The Ministry of Health of Great Britain advises that inoculation against yellow fever should precede vaccination against smallpox by at least 4 days and preferably one week. If smallpox vaccination is given first, 21 days should elapse before the use of yellow fever vaccine. These limitations may be disregarded in emergencies if there is definite evidence of previous successful vaccination against smallpox (typical scar). Although a J.A.M.A. consultant stated: "There is no known contraindication to simultaneous smallpox and yellow fever vaccination which has been done innumerable times in persons scheduled for overseas travel," the strictures advocated by the British authorities seem wise.

Some countries permit travelers to enter without vaccination, but insist that they receive it before departure. French possessions use French neurotropic strain administered by scarification, but the rare complication of encephalitis is more frequent with this method.

TYPHOID. The protective value of antityphoid vaccination is being reassessed by the World Health Organization, but most authorities agree that, at present, every traveler should receive three 0.5 ml subcutaneous inoculations of a standard typhoid vaccine. The United States Public Health Service and most authorities recommend "typhoid-paratyphoid" vaccines. The interval between inoculations should be 7 to 10 days but may be 5 to 28 days. A booster or "recall" dose of 0.5 ml is given annually thereafter. A booster is all that is necessary for one to 5 years after the primary course has been completed. If the patient gives a history of allergy, 0.1 ml of the vaccine may be injected intracutaneously as a substitute for subcutaneous inoculation. Children should be immunized after one year of age with the adult dose. In children under one

year of age, the recommended total dose is 1.0 ml (1,000 million S. typhosa). Because sharp febrile reactions are not uncommon, it is advised to commence with 0.2 ml. The volume of subsequent injections depends upon the presence or absence of reactions.

TETANUS. Inoculation against tetanus is generally recommended. Three inoculations of 0.5 ml of the fluid toxoid at intervals of 3 or 4 weeks are advised. If the alum-precipitated tetanus toxoid is used, two injections at a 3-month interval are sufficient. The first booster should be given after one year, but subsequent ones may be given at 3 to 5-year intervals and at time of injury. Children usually are protected by the use of polyvalent vaccines which include tetanus toxoid.

TYPHUS. Immunization against epidemic typhus is advised for travelers who visit Asia, Africa, and possibly Mexico, especially if they expect to be in places where conditions of living are poor. The recommended dose for adults includes two subcutaneous injections, each 1.0 ml with an interval of 7 to 10 days between. Children should be immunized by three inoculations at 7 to 10-day intervals, each inoculum consisting of the following: 0.5 ml for those 7 to 10 years (total 1.5 ml), 0.25 ml for those 3 to 6 years, and 0.12 ml for those 6 months to 2 years.

Full titers of immunity are obtained if a single booster of 1.0 ml is given at an interval of one to 4 years following completion of the initial course. After 4 years, a full basic course is desirable. During residence in an infected area, an annual booster is recommended. Available packages include two vials, each containing 1.0 ml, and single, 20 ml vials.

CHOLERA. Cholera vaccine may be reserved for those who visit Asia, especially Eastern India and adjacent countries, and the Near East, including Turkey and Egypt. The recommended dose is 0.5 ml (4,000,000 vibrios) subcutaneously (not intramuscularly or intravenously) followed in 7 to 10 days by 1.0 ml. Some recommend a third inoculation either on embarkation or on arrival in an endemic area.

Protection is fully established by the tenth day after the second dose. A full course should be administered if more than 4 years has elapsed since the primary course. Those living in endemic areas should receive a booster semi-annually. Cholera vaccine is marketed in 1.5 ml and 20 ml vials.

PLAGUE. Plague vaccine is likely to produce considerable local and systemic reactions, and immunologic results are uncertain. Therefore, it should not be administered except on specific indication or in the presence of an epidemic. A dose of 1.0 ml is injected subcutaneously and is followed in 7 to 10 days by a 1.0 ml inoculation. A booster shot of 1.0 ml should be given every 4 to 6 months to persons residing in an infected area. At present,

immunization is not required in any part of the world. Plague vaccine is available in 2.0 ml and 20 ml vials.

INFLUENZA. The pandemic of 1957 - 1958 makes it unnecessary to discuss the advisability of immunization against influenza. The vaccine of choice currently contains 500 CCA units of virus/ml composed of 200 CCA units of the Asian strain and 100 units of each of three other common strains. The adult immunizing dose consists of two 1.0 ml doses administered subcutaneously or intramuscularly with the second dose given not less than 2 weeks after the first dose. For those who have received an injection of influenza vaccine during the preceding 6 months, a booster injection of 1.0 ml subcutaneously or intramuscularly should be given. For preschool children (3 months to 5 years of age) the dose is 0.1 ml intracutaneously or subcutaneously, repeated at an interval of one to 2 weeks. For children of 13 years or older, the dose for adults may be used.

It is advisable to warn that immunization against influenza does not protect against the common cold and other viral infections.

INFECTIOUS HEPATITIS. After review of the available information on the subject, the use of gamma-globulin for protection against infectious hepatitis is recommended. Although the drug is expensive and there is some indecision in the medical profession about appropriate dosage and the duration of protection, the following statements represent the views of several authorities:

1. Gamma-globulin is of definite value in the prophylaxis of infectious hepatitis. Although the globulin, even in large doses, is only partially protective against serum hepatitis, it has been fully protective for many months against epidemic hepatitis which is the commonly occurring form of the disease.
2. The duration of protection is variable, but probably averages 6 to 9 months and, in some individuals, is considerably longer.
3. An optimum dose is 0.06 ml/lb (not kilogram) of body weight, although doses as small as 0.02 or 0.01 ml/lb may be effective.
4. No dangers from the use of the drug are apparent. It is possible that protection against other diseases is obtained by its use.
5. The material should be injected at one time intramuscularly (never intravenously) in the buttock. In thin individuals, the dose may be divided in half and one half injected in each buttock.
6. The inoculation should be repeated every 8 months. This would provide three inoculations during a 2-year period.
7. The use of gamma-globulin does not interfere with any of the other inoculations and immunizations.

DIPHTHERIA AND PERTUSSIS FOR CHILDREN. Inoculation of children should be mandatory; the routine followed in usual pediatric care is

satisfactory. The method that will probably be followed employs a combined preparation of diphtheria toxoid (alum precipitated), tetanus toxoid (alum precipitated), and pertussis vaccine (N. N. R.), 0.5 ml being injected subcutaneously at monthly intervals for a total of three doses (1.5 ml).

Diphtheria in adults is not as rare as is thought. Since immunity against diphtheria is waning in the United States, Schick testing of adults is advisable, and if the patient is not immune, the antigens should be administered.

POLIOMYELITIS. All travelers should receive the recommended four 1.0 ml inoculations against poliomyelitis. Now that the vaccine is available in abundant supply, no arbitrary age limit seems desirable. The second dose is given one month after the first; the third, six months after the second; and the fourth, one year after the third.

SCHEDULE OF IMMUNIZATION. An ideal schedule of immunization should be spread over a period of several months with numerous visits at each of which only one procedure is done. Antibody responses are generally maximal when several weeks are allowed to elapse between injections for basic immunization, especially when alum adjuvant vaccines are employed. However, the physician often is confronted with the request to immunize as quickly as possible.

The following schedule may be helpful in arranging for multiple vaccinations and inoculations if little time is available. It is possible to compress the program into three visits extending over 2 weeks, but six visits in a 3-week period are preferable, and an even larger spread provides the greater safety and possibly greater immunity.

Minor inconvenience, such as aches, fever, and malaise produced by biologicals are of little consequence in most patients. But an occasional dramatic reaction demands questioning about allergies, alerting of patient to possible symptoms, and immediate availability of epinephrine.

In those who react adversely to full doses, the intracutaneous administration of 0.1 ml of the required vaccine may be substituted for each 1.0 ml or 0.5 ml dose needed. All ampules should be shaken before use.

First day:	yellow fever	Ninth day:	typhoid, smallpox
Second day:	typhoid, tetanus	Twelfth day:	typhus, cholera (inspect smallpox)
Fifth day:	cholera, typhus		
Sixteenth day:	typhoid, tetanus, gamma-globulin (inspect smallpox)		

MALARIA. The drug of choice for prophylaxis is chloroquine diphosphate (Aralen). It may be taken once weekly in doses of 0.5 Gm (2 tablets, each of 0.25 Gm) starting 10 days before arrival in a malarious area.

The drug should be continued until the return of the patient to the care of his physician at home. Pyrimethamine (Daraprim), 25 mg taken once weekly, is also effective. Recent studies suggest that a single 100 mg dose of pyrimethamine may protect for as long as 20 days, but until these observations are tested widely, weekly doses are preferable. Quinacrine hydrochloride (Atabrine) and chlorguanide (Paludrine) are not considered so protective. Primaquine, 15 mg daily for 14 days, may be given after the return of the patient to medical care at home; the mild toxicity of the drug demands medical supervision during its administration.

AMEBIASIS. Drug prophylaxis against amebiasis is not recommended. Although some of the halogenized quinolones and some arsenic preparations have been used prophylactically, their efficacy has not been established and toxicity remains a factor. Of greater import than toxicity, however, is the possibility that prophylactic doses of amebicides will conceal amebic disease and make diagnosis difficult. At present, careful attention to a hygienic program and diet is considered preferable to drug prophylaxis.

AFRICAN TRYPANOSOMIASIS. Those who plan a trip to Central Africa deserve the protection of a single dose of pentamidine isethionate (Lomidine). This drug offers considerable protection for a period of 3 or 4 months. The dose is 0.2 Gm (dissolved in 5 ml of sterile water) administered intramuscularly. Those who plan to visit only Northern Africa or Southern Africa do not need this injection. A supply of the drug may be obtained from May and Baker, Ltd. in England.

Nitrofurazone (Furacin) may become the drug of choice in the prophylaxis of trypanosomiasis, but its efficacy has not been established.

MOTION SICKNESS. For the first day of the trip, the patient is advised to take meclizine (Bonamine) 50 mg, four hours before boarding the plane or ship, and then once or twice daily as needed. Cyclizine (Marezine), 50 mg twice daily, may also be effective. This policy gives the patient psychologic assurance and confidence in addition to providing the specific effects of the drugs. Another advantage is that most antimotion preparations have some soporific and relaxing effect so that the patient is able to sleep more easily. The patient should be warned about these effects if he plans to drive an automobile. Rectal suppositories are now available for those who have failed to take the drugs prophylactically and in whom vomiting has already developed.

AEROTITIS. Pain in the ear and temporary deafness are most distressing complications of plane travel. Yawning and the chewing of gum during descent are simple measures which help prevent the development of aerotitis or barotitis media and barosinusitis. Middle ear infections, fortunately, are rare. The best prophylaxis consists of avoiding plane travel during an upper

respiratory illness. However, if this is not feasible, prophylactic use of nasal decongestants, such as neosynephrine and antihistamines is advised.

Should aerotitis develop, consultation with a qualified otologist is desirable. Air insufflation to restore patency of the eustachian tubes should be postponed until trials with nasal sprays of decongestants, antihistamines, and corticosteroids have failed. In the treatment of aerotitis, we tend to use antibiotics freely to guard against the development of infection. (B. H. Kran, The Medical Protection of Travelers: GP, 20: 113-121, December 1959)

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